

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered). Please AMEND claims * and ADD new claims * in accordance with the following:

Please CANCEL claim 21 and AMEND claims 4,5,7,8, 9, 12, 18, 22-24 and 26 in accordance with the following:

1-3. (CANCELED)

4. (CURRENTLY AMENDED) A fixing device of an image forming apparatus comprising a heat roller and a pressure roller, the heat roller comprising:

a roller support frame fixedly installed within the heat roller;

a film tube supported by the roller support frame; and

a heat transfer unit transferring radiation energy toward a part of the film tube that is in contact with the pressure roller wherein the heat transfer unit comprises:

a halogen lamp generating light energy,

~~a black light to heat blackbody converting unit~~ converting the light energy emitted from the halogen lamp into heat energy, and

a radiation energy converging unit converging the light energy emitted from the halogen lamp onto the ~~light to heat converting unit~~blackbody.

5. (CURRENTLY AMENDED) A fixing device of an image forming apparatus comprising a heat roller and a pressure roller, the heat roller comprising:

a roller support frame fixedly installed within the heat roller;

a film tube supported by the roller support frame; and

a heat transfer unit transferring radiation energy toward a part of the film tube that is in contact with the pressure roller. ~~The fixing device according to claim 1,~~

wherein:

the heat transfer unit comprises:

a halogen lamp generating light energy,

a light-to-heat converting unit blackbody converting the light energy emitted from the halogen lamp into heat energy, and

a radiation energy converging unit converging the light energy emitted from the halogen lamp onto the light-to-heat converting unitblackbody

the radiation energy converging unit comprises:

a quartz glass plate transmitting the light energy emitted from the halogen lamp, and

a reflector reflecting the light energy emitted from the halogen lamp towards the quartz glass plate.

6. (ORIGINAL) The fixing device according to claim 5, wherein the reflector is installed above the quartz glass plate to enclose the halogen lamp.

7. (CURRENTLY AMENDED) The fixing device according to claim 4, further comprising:

a thermal grease applied on an external surface of the light-to-heat converting unitblackbody.

8. (CURRENTLY AMENDED) The fixing device according to claim 4, wherein a material is coated on an external surface of the light-to-heat converting unitblackbody to be between the radiation energy converging unit and the black light-to-heat converting unitblackbody, the material comprising a material with a high light transmittance and a low heat conductivity as compared to the black light-to-heat converting unitbody.

9. (CURRENTLY AMENDED) The fixing device according to claim 5, wherein the light-to-heat converting unitblackbody is a black body having an absorption property corresponding to the emitted light energy.

10. (ORIGINAL) The fixing device according to claim 5, wherein the thickness of the quartz glass plate is not greater than 5 mm.

11. (CANCELED)

12. (CURRENTLY AMENDED) An image forming apparatus to form a toner image on

an image forming medium, comprising:

a heat roller;

a pressure roller, wherein a paper passes between the heat roller and the pressure roller;

and

a focusing device focusing heat on a position where the heat roller and the pressure roller engage with each other to fix a toner image onto the image forming medium;

wherein:

the heat roller comprises:

a film tube forming an outermost layer of the heat roller and rotating in a linear speed same as that of the heat roller,

a roller support frame supporting the film tube, and

a heat transfer unit;

the heat transfer unit comprises:

a halogen lamp emitting radiation energy, and

a black-body converting the radiation energy into heat energy.

13. (ORIGINAL) The image forming apparatus of claim 12, the film tube is formed of polyimide and is coated with PFA or PTFE on a surface thereof.

14. (ORIGINAL) The image forming apparatus of claim 12, wherein the roller support frame is secured with the heat roller together with the heat transfer unit.

15. (ORIGINAL) The image forming apparatus of claim 12, wherein only the film tube is engaged and rotated with the pressure roller.

16. (CANCELED)

17. (PREVIOUSLY PRESENTED) The image forming apparatus of claim 12, wherein the black body is a light-to-heat converting element comprising a glass coating or a thermal grease on an external surface thereof.

18. (PREVIOUSLY PRESENTED) The image forming apparatus of claim 12, further comprising:

a radiation energy converging unit comprising

a reflector having a top and both sides of the halogen lamp and spaced from the halogen lamp, and

a quartz glass plate installed below the halogen lamp and spaced from the halogen lamp and in contact with a top of the black-body.

19. (ORIGINAL) The image forming apparatus of claim 18, wherein the reflector comprises an inverted U-shape and reflects the radiation energy emitted from the halogen lamp to an underside of the halogen lamp.

20. (ORIGINAL) The image forming apparatus of claim 18, wherein the quartz glass plate comprises a thickness not greater than 5 mm so that the light-to-heat converting element is heated to a fixing temperature within a short length of time.

21. (CANCELLED)

22. (CURRENTLY AMENDED) The image forming apparatus of claim 18, wherein:
the radiation energy emitted by the halogen lamp is reflected by the reflector and converged onto the quartz glass plate, and

the quartz glass plate is disposed between the reflector and the black-body such that the radiation energy converged onto the quartz glass plate is transmitted to the black-body.

23. (CURRENTLY AMENDED) The image forming apparatus of claim 22, wherein the quartz glass plate comprises good light transmittance and most of the radiation energy is transferred to the black body, which is in contact with a lower surface of the quartz glass plate, and the transferred radiation energy is converted into heat energy while being absorbed by the black-body.

24. (CURRENTLY AMENDED) The image forming apparatus of claim 23, wherein the quartz glass plate has a heat conductivity where most of the heat energy converted by the black-body is used to increase a temperature of the pressure roller to fix the toner image onto the image forming medium.

25. (ORIGINAL) The image forming apparatus of claim 24, wherein the film tube is supported by the roller support frame and is rotated while engaged with the pressure roller with a

predetermined pressure.

26. (ORIGINAL) The image forming apparatus of claim 25, wherein the film tube receives the heat from the black-body and transfers the heat to the image forming medium.